

CLAIMS

1. A process for separation and purification of a crude mixture comprising hydroquinone and resorcinol, optionally tars, and optionally catechol, in which process the crude mixture is first of all subjected to a series of distillation stages comprising:
- (i) an optional distillation stage (I) designed to produce catechol as distillation top product,
- (ii) the distillation bottom product obtained under (i) or the crude mixture in the absence of stage (I) is subjected to a distillation stage (II) designed to produce, as distillation top product, a resorcinol-rich fraction comprising resorcinol, essentially, and hydroquinone,
- (iii) the distillation bottom product obtained under (ii) is subjected to a distillation stage (III) designed to produce, as distillation top product, a hydroquinone-rich fraction comprising hydroquinone, essentially, and resorcinol,
- and then the hydroquinone-rich fraction and/or the resorcinol-rich fraction is/are subjected to a refining stage (IV or V) in order to extract the hydroquinone and/or the resorcinol respectively.
2. The process as claimed in claim 1, characterized in that stage (I), when it is present, or stage (II) is preceded by at least one preliminary detarring stage (1, 1') designed to produce, as bottom product, a tar-rich fraction and, as top product, a detarred fraction which is used to feed stage (I) or stage (II).
3. The process as claimed in claim 2, characterized in that two predistillation stages (1, 1') are provided, the tar-rich bottom fraction from the first (1) being used to feed the second (1') and the

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two detarred top fractions being used to feed stage (I) or (II).

4. The process as claimed in any one of claims 1 to 3, characterized in that stage (II) is designed to result in a resorcinol-rich fraction comprising:

- from 75 to 95%, preferably from 85 to 92%, of resorcinol,
- from 5 to 25%, preferably from 8 to 15%, of hydroquinone.

5. The process as claimed in any one of claims 1 to 4, characterized in that stage (III) is designed to result in a hydroquinone-rich fraction comprising:

- from 75 to 98%, preferably from 85 to 97.5%, of hydroquinone,
- from 2 to 25%, preferably from 2.5 to 15%, of resorcinol.

6. The process as claimed in any one of claims 1 to 5, characterized in that the refining of the rich fractions is carried out on drainers.

7. The process as claimed in any one of claims 1 to 6, characterized in that the distillation column (I) has the following specifications:

- number of theoretical stages: from 5 to 40, preferably from 10 to 30;
- reflux ratio R of between 1 and 10, preferably between 2 and 5.

8. The process as claimed in any one of claims 1 to 6, characterized in that the distillation column (II) has the following specifications:

- number of theoretical stages: from 10 to 85, preferably from 15 to 40;
- reflux ratio R of between 1 and 35, preferably between 5 and 25.

9. The process as claimed in any one of claims 1 to 6, characterized in that the distillation column (III) is a scraped falling film device or a distillation column having the following specifications:

- number of theoretical stages: from 1 to 10, preferably from 1 to 5,
- reflux ratio R of between 0.5 and 5, preferably between 1 and 2.
- 5 10. The process as claimed in any one of claims 1 to 6, characterized in that the detarring column or columns (1, 1') is/are scraped falling film devices.
11. The process as claimed in any one of claims 1 to 10, characterized in that the crude mixture
- 10 comprises, with respect to the total mixture:
- from 20 to 60%, in particular from 30 to 50%, by weight of hydroquinone,
- from 2 to 20%, in particular from 2 to 15%, by weight of resorcinol,
- 15 - from 0 to 20%, in particular from 5 to 15%, by weight of catechol,
- the remainder being formed of various compounds, essentially tars.
12. A plant for the separation and purification of
- 20 a crude mixture comprising hydroquinone, resorcinol, tars and optionally catechol, comprising:
- (i) an optional distillation column (I) designed to produce catechol at the column top,
- 25 (ii) a distillation column (II), the inlet of which is connected to the bottom of column (I) or receives the crude mixture in the absence of column (I), this column (II) being designed to produce, at the column
- 30 top, a resorcinol-rich fraction comprising resorcinol, essentially, and hydroquinone,
- (iii) a distillation column (III), the inlet of which is connected to the bottom of column (II), this column (III) being designed to
- 35 produce, at the column top, a hydroquinone-rich fraction comprising hydroquinone, essentially, and resorcinol,
- (iv) one or more refining devices (IV, V) for

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providing for the refining of the hydroquinone-rich fraction and/or the resorcinol-rich fraction in order to extract hydroquinone and/or resorcinol respectively.

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13. The plant as claimed in claim 12, characterized in that it additionally comprises:

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- a detarring column (1) designed to produce, at the column top, a detarred fraction and, at the bottom of the column, a tar-rich fraction
 - optionally at least one other distillation column (1') fed with the tar-rich fraction originating from the preceding column (1) and designed to produce, at the column top, a detarred fraction and, at the bottom, a tar-rich fraction,
- the top fraction or fractions of these columns being used to feed column (I) or (II).

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14. The plant as claimed in claim 12 or 13, characterized in that the column (II) is designed to result in a resorcinol-rich fraction comprising:

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- from 75 to 95%, preferably from 85 to 92%, of resorcinol,
- from 5 to 25%, preferably from 8 to 15%, of hydroquinone.

15. The plant as claimed in any one of claims 12 to 14, characterized in that the column (III) is designed to result in a hydroquinone-rich fraction comprising:

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- from 75 to 98%, preferably from 85 to 97.5%, of hydroquinone,
- from 2 to 25%, preferably from 2.5 to 15%, of resorcinol.

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16. The plant as claimed in any one of claims 12 to 15, characterized in that the refining device or devices are drainers.

17. The plant as claimed in any one of claims 12 to 16, characterized in that the distillation column (I) has the following specifications:

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- number of theoretical stages: from 5 to 40,

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preferably from 10 to 30;

- reflux ratio R of between 1 and 10, preferably between 2 and 5.

18. The plant as claimed in any one of claims 12 to 17, characterized in that the distillation column (II) has the following specifications:

- number of theoretical stages: from 10 to 85, preferably from 15 to 40;
- reflux ratio R of between 1 and 35, preferably between 5 and 25.

19. The plant as claimed in any one of claims 12 to 18, characterized in that the distillation column (III) is a scraped falling film device or a distillation column having the following specifications:

- number of theoretical stages: from 1 to 10, preferably from 1 to 5,
- reflux ratio R of between 0.5 and 5, preferably between 1 and 2.

20. The plant as claimed in any one of claims 12 to 19, characterized in that the detarring column or columns (1, 1') is/are scraped falling film devices.

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